

AMENDMENTS TO CLAIMS

Rewrite the claims as follows:

1. (previously presented) A method of forming a mask, comprising:

forming a first layer of material over a substrate;

forming an opaque layer overlying said first layer of material, said opaque layer having at least one opening therein filled with a first resist material, said first resist material residing over said first layer of material and defining areas of said first layer of material which are to be removed;

using said first resist material as a mask to remove said areas of said first layer of material; and

removing said first resist material.

2. (previously presented) The method of claim 1, wherein the using of said first resist material as a mask comprises providing a first region from which said first layer of material is removed, and the removing of said first resist material comprises providing a second region from which said first resist material is removed, said first and second regions having different phase shift characteristics with respect to light transmitted therethrough.

3. (original) The method of claim 2, wherein said first region provides a phase shift with respect to light transmitted therethrough of 180 degrees and said second

region provides a phase shift with respect to light transmitted therethrough of zero degrees.

4. (original) The method of claim 2, wherein said first region provides a phase shift with respect to light transmitted therethrough of zero degrees and said second region provides a phase shift with respect to light transmitted therethrough of 180 degrees.

5. (original) The method of claim 2, wherein said first and second regions form a rim type phase-shifter.

6. (original) The method of claim 2, wherein said at least one opening comprises a plurality of openings.

7. (original) The method of claim 6, wherein said first and second regions form a Levenson-type phase-shifter.

8. (previously presented) The method of claim 1, wherein the forming of said opaque layer comprises:

depositing a second resist material on said opaque layer;

removing a portion of said second resist material, leaving said opening;

etching an uncovered portion of said opaque layer underlying the removed portion of said second resist material, thereby deepening said opening; and

removing the remainder of said second resist material.

9. (previously presented) The method of claim 8, wherein the using of said first resist as a mask comprises:

providing said first resist material within said opening and over said opaque layer;

directing a first exposure through said substrate to expose a portion of said first resist material;

hardening the exposed portion of said first resist material;

directing a second exposure at said first resist material to remove any unhardened portions of said first resist material;

providing a second material over said opaque layer and said hardened portion of said first resist material;

performing a lithographic step on a portion of said second material overlying and bounded by said first resist material to expose and remove said portion of said second material; and

etching said first layer of material underlying said exposed and removed portion of said second material.

10. (previously presented) The method of claim 9, wherein said first resist material is a positive-tone resist material capable of making an image reverse tone.

11. (previously presented) The method of claim 9, wherein the exposed portion of said first resist material is hardened by baking.

12. (original) The method of claim 1, wherein said first layer of material comprises a material adapted to allow a 180 degree phase shift with respect to open areas of said substrate.

13. (original) The method of claim 12, wherein said first layer of material comprises one or more from the group consisting of molybdenum-silicide, chromium-fluoride, silicon nitride-titanium nitride, tantalum silicide, and zirconium silicon oxide.

14. (original) The method of claim 13, wherein said first layer of material comprises molybdenum-silicide.

15. (original) The method of claim 13, wherein said first layer of material comprises chromium fluoride.

16. (original) The method of claim 1, wherein said substrate comprises a material transparent to ultraviolet light.

17. (original) The method of claim 16, wherein said substrate comprises quartz.

18. (original) The method of claim 1, wherein said opaque layer comprises chromium.

Claims 19 and 20 (canceled).

21. (previously presented) The method of claim 30, wherein the using of said first material as a mask comprises providing at least one first region from which said opaque material is removed, and the removing of said first material comprises providing at least one second region from which said first material is removed, said first and second regions having different phase shift characteristics with respect to light transmitted therethrough.

22. (original) The method of claim 21, wherein said first region provides a phase shift with respect to light transmitted therethrough of 180 degrees and said second region provides a phase shift with respect to light transmitted therethrough of zero degrees.

23. (original) The method of claim 21, wherein said first region provides a phase shift with respect to light transmitted therethrough of zero degrees and said second region provides a phase shift with respect to light transmitted therethrough of 180 degrees.

24. (original) The method of claim 21, wherein said first and second regions form a rim type phase-shifter.

25. (original) The method of claim 21, wherein said at least one first region comprises a plurality of first regions and wherein said at least one second region comprises a plurality of second regions.

26. (original) The method of claim 25, wherein said at least one of said first and second regions form a rim type phase-shifter.

27. (original) The method of claim 26, wherein said at least one of said first and second regions form a Levenson-type phase-shifter.

Claims 28 and 29 (canceled).

30. (previously presented) A method of forming a mask, comprising:
forming an opaque layer over a substrate, said opaque layer having at least one opening therein filled with a first material, said first material defining areas of said substrate which are to be removed, said forming comprising:

depositing a first resist material on said opaque layer;

removing a portion of said first resist material, leaving said opening;

etching an uncovered portion of said opaque layer underlying the removed portion of said first resist material, thereby deepening said opening a first time; and

removing the remainder of said first resist material;

etching the substrate defined by said deepened opening, thereby deepening said opening a second time;

using said first material as a mask to remove said areas of said substrate,
wherein the using of said first material as a mask comprises:

providing said first material within said twice deepened opening and over
said opaque layer;

directing a first exposure through said substrate to expose a portion of said
first material;

hardening the exposed portion of said first material;

directing a second exposure at said first material to remove any unhardened
portions of said first material;

providing a second material over said opaque layer and said hardened portion
of said first material;

performing a lithographic step on a portion of said second material overlying
and bounded by said first material to expose and remove said portion of said second
material; and

etching said opaque layer underlying said exposed and removed portion of
said second material; and

removing said first material.

31. (original) The method of claim 30, wherein the exposed portion of said
first material is hardened by baking.

32. (original) The method of claim 30, wherein said first material is a positive-tone resist material capable of making an image reverse tone.

33. (previously presented) The method of claim 30, wherein the using of said first material as a mask comprises:

providing said first material within said deepened opening and over said opaque layer;

directing a first exposure through said substrate to expose a portion of said first material;

baking said first material to harden the exposed portion of said first material;

directing a second exposure at said first material to remove any unhardened portions of said first material;

providing a second material over said opaque layer and said hardened portion of said first material;

performing a lithographic step on a portion of said second material overlying and bounded by said first material to expose and remove said portion of said second material; and

etching said opaque layer underlying said exposed and removed portion of said second material.

34. (original) The method of claim 33, further comprising etching said substrate underlying said etched opaque layer and removing the remainder of said first and second materials.

35. (original) The method of claim 33, wherein said first material is a positive-tone resist capable of making an image reverse tone.

Claims 36-44 (canceled).